Beaver Lake Monitor

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In this issue

1999 Brings Good Trends in Water Quality

The Beaver Lake Management District funds the monitoring of Beaver Lake including the two streams feeding the lake and the main lake basins (Beaver Lake 1 and 2). The monitored streams include Stream 1 which enters Beaver Lake 1 directly from the north (adjacent to Trossachs) and Stream 2 which enters the main body of Beaver Lake from the northwest, draining the Hazel Wolf Preserve area. Presented below is a summary of 1999 stream and lake water quality.

Stream Quality

During the 1999 water year (October 1998 through September 1999), Beaver Lake streams were monitored on a biweekly basis. In Table 1, the 1999 phosphorus concentrations for the stream sites are compared with previous year's data. At both sites, current phosphorus levels are the lowest recorded for the four years.

Table 1: Average Stream Phosphorus Concentration (µg/L) by Year

Year	Total Samples Stream 1/2	Stream 1 Average	Stream 2 Average
1992	11/12	43	40
1997	8/8	39	37
1998	6/7	35	22
1999	13/13	18	17

When phosphorus loading (concentration times water volume entering the lake) is calculated, Stream 1 contributed 6.8 kilograms of phosphorus (kg P/yr) for 1999 compared to 8.2 kg P/yr in 1992. Stream 2 was slightly higher, contributing 15.1 kg P/yr in 1999 compared to 13.0 kg P/yr in 1992. In 1999, higher loading at Stream 2 was related to higher rainfall for the year.

Lake Quality

Since 1985, Beaver Lake has participated in the King County volunteer lake monitoring program, which evaluates the long-term trends in lake water quality. In Figure 1, algae and phosphorus data are summarized. For Beaver Lake 1, lake phosphorus levels have decreased from 1997 to 1999, dropping below levels observed in 1992. This same pattern was observed in Beaver Lake 2.

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The Quest for Drinking Water on Beaver Lake: A Look Back

Until late 1969, most Beaver Lake residents drank water straight from the lake. The water was sanitary, but had a fishy odor and at times, a vibrant brown color from decaying vegetation. It left spectacular rings in the bathtub. A few residents had private wells, but that too had its problems, mainly due to the high level of iron contained in the well water. Among other things, the iron would deposit rust stains on laundry. Talk about your ring around the collar!

Serious planning for a public water system began in 1967, and by the next February, the community newsletter advised that copies of the water district petition were available for property owners' signatures. In language that now seems comically outdated, the notification explained that in cases of joint ownership of property, "only one signature is required, preferably the husband's."

Once all the signatures were collected, Water District 121 was officially formed and began the task of finding a suitable location for its base of operations. Near the south end of the lake, three large properties had wells producing water of excellent quality, so the District elected to buy adjacent property and drill a community well between them. Success was quickly at hand when on the first try, sufficient flow of very good water was produced at just past 100 feet deep. However, as extra measure of insurance, drilling continued down to 130 feet. Next the District built a large storage tank near the big power line northwest of the lake and in mid-October, 1969, meter installation begun. By the end of the year, all thirsty residents were being served.

Water District 121 provided service for many years as a small operation with no office or

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1999 Brings Good Trends . . .

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Lake phosphorus concentrations normally fluctuate from year to year, depending upon rainfall patterns, watershed disturbances, and other environmental factors. The patterns observed at Beaver Lake are typical of other lakes in the region.

Interestingly, algal levels at Beaver Lake did not correlate directly with recent downward trends in phosphorus levels. In 1997 and 1998, fall algal blooms resulted in higher averages for both years. Generally, algal levels are affected by changes in temperature, light, and nutrient levels. A combination of these factors likely contributed to the higher algal levels observed during 1997 and 1998.

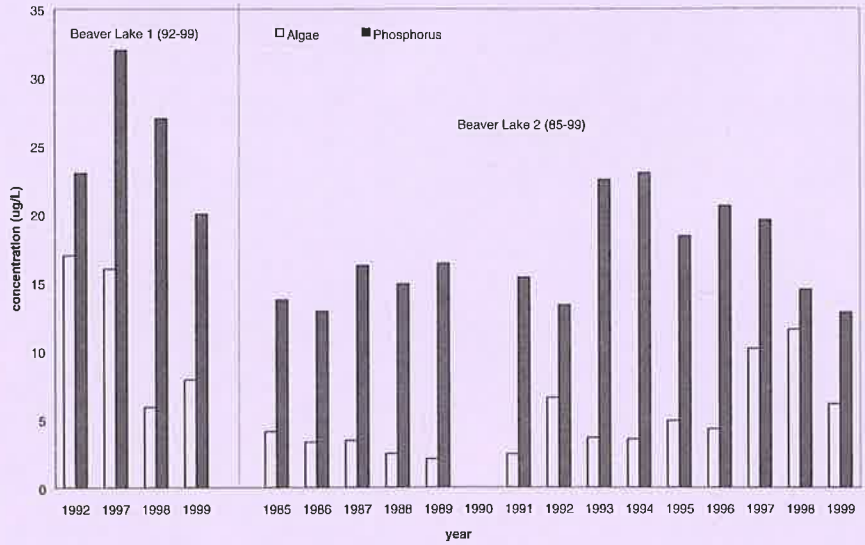

Figure 1: Annual Averages for Algae (as chlorophyll a) and Total Phosphorus

Based on available data, actions to preserve Beaver Lake water quality are working. Good water quality continues to enter Beaver Lake even as residential development occurs. For the future, regular stream and lake monitoring is vital to evaluating the ongoing status of watershed preservation efforts.

Lake Management District Renewal

The Beaver Lake Management District Advisory Board has been working since January to draft a Lake Management District (LMD) proposal for consideration by Beaver Lake property owners. The proposal is complete and the Board is seeking input on the proposed boundaries, funding rates and zones, and five-year work program.

LMD Proposal

A three-zone LMD has been proposed which will raise up to $200,000 over five years. The three LMD zones include waterfront, non-waterfront, and Norris Estates. The LMD costs will be proportionately split between the three zones shown in Table 1.

The LMD work program will include a five-year stream and lake monitoring program, biannual newsletter, and contingency funds for land acquisition weed management, and other education related outreach activities. The monitoring program includes:

- biweekly stream monitoring to continue assessing the quality of water entering the lake;
- regular stormwater quality sampling to assess new development impacts; and
- comprehensive lake monitoring in 2005 to evaluate whole-lake water quality.

In the interim, Beaver Lake monitoring will be done through participation in King County volunteer lake monitoring program.

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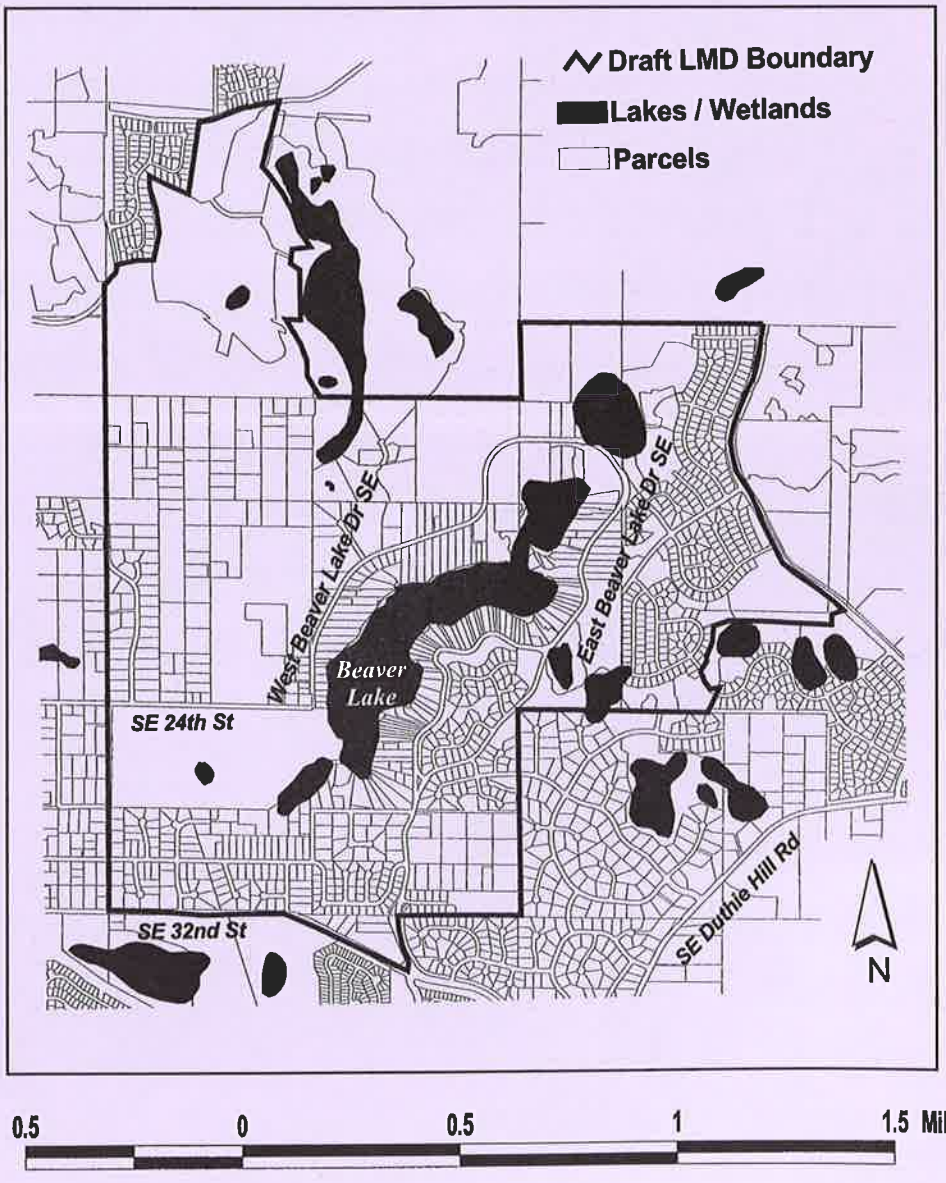
Table 1: LMD Revenue Total and Annual Assessments by Zone

Zone	Five-Year Revenue Total	Total Parcels	Annual Assessment
Waterfront	$110,000	117	$184
Non-Waterfront	$72,000	879	$17
Norris Estates	$18,000	1	$3,600

Figure 2: Proposed LMD Boundary



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BEAVER LAKE MANAGEMENT DISTRICT ADVISORY BOARD:
Donna Carlson..... 557-8342
Al Sauerbrey..... 392-3964
Lisa Shank..... 392-5010
Sharon Steinbis..... 557-5395
Bob White..... 557-6798

NEWSLETTER STAFF
Editor.....Suzanne Rowe
Contibuting Writers....Sharon Walton, Ruth Shearer

TO CONTACT US:
Beaver Lake Monitor (206) 296-6519
c/o King County Department of Natural Resources
Water & Land Resources Division
201 South Jackson Street, Suite 600
Seattle, WA 98104

Email: sharon.walton@metrokc.gov
Web page: http://dnr.metrokc.gov/wlr

Beaver Lake Web Page
http://www.beaverlake.org

King County
Department of Natural Resources

Water and Land Resources Division
201 South Jackson Street, Suite 600
Seattle, WA 98104

LMD Renewal . .

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Next Steps

The board will be seeking additional informal feedback on this proposal via telephone polls and through small neighborhood meetings. The board hopes to finalize the proposal in July and forward it to the City of Sammamish for formal consideration. Comments on the LMD proposal can be directed to board members listed to the left.

The Quest for Drinking Water. . .

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maintenance facility. Commissioners and employees used their own homes, vehicles, and tools for District business. But as the population grew, it became apparent that this local, homespun arrangement could not continue. In 1980, after extensive discussions of chemical treatment and water quality, the District merged with the much larger Water District 82 in the Pine Lake area.

Although Beaver Lake is still considered sanitary and safe to drink, it is now left for the pets and wildlife.

Thanks to Ruth W. Shearer, a long-time resident of Beaver Lake, for this article.

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